RECEIVED

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TECH CENTER 1600/2900

1645

1600

ENTERED

#15
J. moon
12/21/02

```
 4 <110> APPLICANT: Rosely M. Zancope-Oliveira
 5        Timothy J. Lott
 6        Leonard W. Mayer
 7        Errol Reiss
 8        George S. Deepe
11 <120> TITLE OF INVENTION: NUCLEIC ACIDS OF THE M ANTIGEN GENE OF
12        HISTOPLASMA CAPSULATUM, ANTIGENS, VACCINES, AND ANTIBODIES,
13        METHODS AND KITS FOR DETECTING HISTOPLASMOSIS
16 <130> FILE REFERENCE: 14114.0325U2
18 <140> CURRENT APPLICATION NUMBER: 09/674,195B
19 <141> CURRENT FILING DATE: 2000-10-26
21 <150> PRIOR APPLICATION NUMBER: PCT/US99/09151
22 <151> PRIOR FILING DATE: 1999-04-27
24 <150> PRIOR APPLICATION NUMBER: 60/083,676
25 <151> PRIOR FILING DATE: 1998-04-30
27 <160> NUMBER OF SEQ ID NOS: 13
29 <170> SOFTWARE: FastSEQ for Windows Version 4.0
31 <210> SEQ ID NO: 1
32 <211> LENGTH: 3862
33 <212> TYPE: DNA
34 <213> ORGANISM: Histoplasma capsulatum
36 <220> FEATURE:
37 <221> NAME/KEY: misc_feature
38 <222> LOCATION: 3258
39 <223> OTHER INFORMATION: n = g, a, c or t(u)
41 <400> SEQUENCE: 1
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43 atcgatctat attttgaagt ttatcacctc aatggcttca ccccatgacg cacctttat   120
44 ttttattttc attcatcttc tctgtggcaa acatgcaggt atgcgagctc tggaccctgg   180
45 ggtgtggccc ttgatgcata tggtttattt atagccgccc ggaagccctg gcctgttaaa   240
46 ttttggacct cctcccgcca ttctttccaa acttcgtgcg tccgtttccc atttcccccc   300
47 tccccatttg ggttccctat aggccactgc gtgctccact caagaagggt cccagtcaat   360
48 ttggtcccta ccctctccaa cactatctgc atatgtaata tatatcgata tctaactgcc   420
49 attgattatt tgtcttcttc agcatctttt tgtctcgagc aagcttactc cacgttcaat   480
50 tcagggggta aaaatgcggt cgctcaagct tatactcgcc tcggcgggtg ttgtttctgc   540
51 agcctgtccc tacatgtcag gggagatgcc tagcggtcag aaaggccccc tcgatcgccg   600
52 ccatgacact ctctccgacc ctacggacca gtttcttagc aagttttaca ttgacgatga   660
53 acagtcggtg ctaacaacgg acgtgggtgg tcccatcgag gaccaacaca gcctgaaggc   720
54 tggaaataga ggcccaactc tacttgagga ttttatcttc cgccagaaga ttcaacactt   780
55 tgatcatgag agggtatgta gatacaaaat atgtgaccgt gttgcaaatc cgctaattca   840
56 attttacgca ggttcctgag cgcgccgtcc atgctcgagg agctggtgcc catggcgtat   900
57 tcacatccta taataactgg tcgaatatca cagccgcatc cttcttgaac gcggcaggaa   960
58 agcagacacc agtattcgtg cggttttcta cagtcgctgg tagcagaggc agtgttgact  1020
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 59 ctgctcgcga tatccacgga tttgcgaccc gtctgtatac cgatgaaggc aattttggta   1080
 60 agcattatat cgtggtagtc atactcataa cagcacaaca aatatgaata caaacccagg   1140
 61 acctaggctg actactcggc aatgtagata tcgtcggaaa caacgttcca gtcttcttca   1200
 62 ttcaggacgc tattcaattc cctgatttga ttcacgctgt caagccgcaa ccagacagtg   1260
 63 aaattcccca ggctgcaact gcacatgata cggcatggga tttcctcagc cagcagccca   1320
 64 gctcattgca tgccctcttc tgggcaatgt caggacatgg aatccctcgc tcaatgcgtc   1380
 65 atgttgatgg gtggggcgtc cataccttcc gacttgtcac cgacgagggc aactcgacct   1440
 66 tggtcaagtt tcgctggaag accctccaag gaagagcggg cctggtatgg gaagaggcac   1500
 67 aggctcttgg cggaaagaat cccgacttcc atcgacaaga cctctgggat gccattgaat   1560
 68 ctggaaggta ccctgagtgg gaggtaagat atgattcccc caaatcatta gttctgacag   1620
 69 tgtttctctg ctctgtcggt tgctcttttc gtctttttct atatcttcaa ctaagactga   1680
 70 ctttatatac gttttactca tatagctggg cttcaattg gtgaatgaag cagatcaatc    1740
 71 caagtttgat ttcgatctat tagatcccac caaaatcatc ccagaagaac ttgttccttt   1800
 72 caccccaatc ggaaaaatgg tcttgaaccg aaacccaaaa agttattttg ccgaaactga   1860
 73 gcagatcatg gttggtccac cccctatata tttggaatat gaatacatgt atagctagat   1920
 74 gaagcgtata tctaaatata tttccacagt tccaaccagg tcatgtagtt cgcggaatcg   1980
 75 atttcacgga tgacccttg cttcagggcc gcttgtactc ctaccttgac actcaattga    2040
 76 atcgccatgg aggtcccaac ttcgagcaac tgccgatcaa cagaccccgc atcccattcc   2100
 77 ataacaacaa tcgcgacggt gctggtaagc tacttctcac ctaccatgtc aacttccatc   2160
 78 ttgacccaat cgatttgtat agagtattaa catccccgtc tgcacaggac aaatgttcat   2220
 79 ccctctaaac acggccgcat atacacccaa ctcaatgagc aacggattcc cacaacaagc   2280
 80 caaccggacc cataacagag gattcttcac cgcacctggg cgtatggtaa atggaccact   2340
 81 agtgcgcgag ctcagccga gcttcaacga cgtctggtcc caaccgcgtc tcttctacaa     2400
 82 ctcactcacg gtcttcgaga agcaattcct cgtcaacgcc atgcgcttcg aaaactccca   2460
 83 cgtgcggagt gaaaccgtgc gtaagaacgt catcatccag ctgaaccgcg tcgacaacga   2520
 84 cctcgcccgc cgcgtcgcgc tagctatcgg cgtcgaaccc ccatccccgg acccaacctt   2580
 85 ctaccacaac aaggcaaccg tccccatcgg caccttcggc acgaatctcc tgcggctcga   2640
 86 cgggctgaaa atcgccctcc tgacaagaga cgacggtagc ttcacgatcg cggagcagct   2700
 87 ccgggccgcg tttaacagcg ccaacaacaa agtagatatc gtcctagtgg gctcatcgct   2760
 88 tgatccccaa cgcggcgtga acatgaccta ttccggcgcc gacggctcga tcttcgatgc   2820
 89 cgtgatcgtc gtcggcggcc tgctcacgag cgcctcaacg caatacccaa gaggtcgccc   2880
 90 gctcaggatt attacggatg catacgcgta tggaaagccc gttggcgccg tcggtgacgg   2940
 91 tagcaatgaa gcccttcgtg acgtccttat ggccgctggt ggggatgcgt cgaatgggct   3000
 92 ggaccagccc ggtgtgtata tttccaacga tgtgagtgag gcctacgtta gaagtgtctt   3060
 93 ggacggattg acggcatatc ggttcttgaa tcggttcccg ttggatagaa gcttggtatg   3120
 94 aggtttgggg cgcaaatatg ggtttactac cccccccccc cccttttttt ttttcctttt   3180
 95 ctgtttttcc atctttggtt gaggtaatat tgcagatatc agtaaattgc gtttacgaaa   3240
W--> 96 gccggtgtca agcttcanga ggcctaatta atttgaagag gaggttgaag tgaaatcttg   3300
 97 gtgtaactat aataatttat aataactaat aacttataat taatgtctat tgtaatttcc   3360
 98 tctcacattc aatctatatt tgatccttgt cctttgtagc tgtttaaata taagccaaga   3420
 99 gagacaaata atgatagatt aacaaataat tgcacaccca ataggccttc cctcacgata   3480
100 tcagatatta tctatcatgt tgtaatgata cctcaaaaat gccacaagct tgcctgatat   3540
101 tgaatattta tatgctgtaa atgtagggaa gagcgtacca tccaaataac cagaaaaaca   3600
102 tgttttagct taaaatctca ctaaggtcgg tcgtgtctat ttgaaatggc tgcggcaagc   3660
103 tgactatctg ataaaaatgt ctgtatttcc gcttcacgac gcatgttatg actttcgaat   3720
104 atagataaaa cctgaacgat ttagcccctg ttgggggaaa tagggggttag ggggggcgagc 3780
105 tacatatcat tcccatatga ccaaaaacta aaatagatat atatatatat atatatatat  3840
106 acaacacctt caaaaaggat cc                                            3862
109 <210> SEQ ID NO: 2
```

Input Set : **A:\W159565.txt**
Output Set: **N:\CRF4\12132002\I674195B.raw**

```
110 <211> LENGTH: 707
111 <212> TYPE: PRT
112 <213> ORGANISM: Histoplasma capsulatum
114 <400> SEQUENCE: 2
115 Met Pro Ser Gly Gln Lys Gly Pro Leu Asp Arg Arg His Asp Thr Leu
116  1               5                  10                  15
117 Ser Asp Pro Thr Asp Gln Phe Leu Ser Lys Phe Tyr Ile Asp Asp Glu
118              20                  25                   30
119 Gln Ser Val Leu Thr Thr Asp Val Gly Gly Pro Ile Glu Asp Gln His
120          35                  40                  45
121 Ser Leu Lys Ala Gly Asn Arg Gly Pro Thr Leu Leu Glu Asp Phe Ile
122      50                  55                  60
123 Phe Arg Gln Lys Ile Gln His Phe Asp His Glu Arg Val Pro Glu Arg
124 65                  70                  75                  80
125 Ala Val His Ala Arg Gly Ala Gly Ala His Gly Val Phe Thr Ser Tyr
126              85                  90                  95
127 Asn Asn Trp Ser Asn Ile Thr Ala Ala Ser Phe Leu Asn Ala Ala Gly
128             100                 105                 110
129 Lys Gln Thr Pro Val Phe Val Arg Phe Ser Thr Val Ala Gly Ser Arg
130          115                 120                 125
131 Gly Ser Val Asp Ser Ala Arg Asp Ile His Gly Phe Ala Thr Arg Leu
132      130                 135                 140
133 Tyr Thr Asp Glu Gly Asn Phe Asp Ile Val Gly Asn Asn Val Pro Val
134 145                 150                 155                 160
135 Phe Phe Ile Gln Asp Ala Ile Gln Phe Pro Asp Leu Ile His Ala Val
136             165                 170                 175
137 Lys Pro Gln Pro Asp Ser Glu Ile Pro Gln Ala Ala Thr Ala His Asp
138             180                 185                 190
139 Thr Ala Trp Asp Phe Leu Ser Gln Gln Pro Ser Ser Leu His Ala Leu
140             195                 200                 205
141 Phe Trp Ala Met Ser Gly His Gly Ile Pro Arg Ser Met Arg His Val
142     210                 215                 220
143 Asp Gly Trp Gly Val His Thr Phe Arg Leu Val Thr Asp Glu Gly Asn
144 225                 230                 235                 240
145 Ser Thr Leu Val Lys Phe Arg Trp Lys Thr Leu Gln Gly Arg Ala Gly
146             245                 250                 255
147 Leu Val Trp Glu Glu Ala Gln Ala Leu Gly Gly Lys Asn Pro Asp Phe
148             260                 265                 270
149 His Arg Gln Asp Leu Trp Asp Ala Ile Glu Ser Gly Arg Tyr Pro Glu
150         275                 280                 285
151 Trp Glu Leu Gly Phe Gln Leu Val Asn Glu Ala Asp Gln Ser Lys Phe
152     290                 295                 300
153 Asp Phe Asp Leu Leu Asp Pro Thr Lys Ile Ile Pro Glu Glu Leu Val
154 305                 310                 315                 320
155 Pro Phe Thr Pro Ile Gly Lys Met Val Leu Asn Arg Asn Pro Lys Ser
156             325                 330                 335
157 Tyr Phe Ala Glu Thr Glu Gln Ile Met Phe Gln Pro Gly His Val Val
158             340                 345                 350
159 Arg Gly Ile Asp Phe Thr Asp Asp Pro Leu Leu Gln Gly Arg Leu Tyr
```

Input Set : **A:\W159565.txt**
Output Set: **N:\CRF4\12132002\I674195B.raw**

```
160           355                    360                   365
162  Ser Tyr Leu Asp Thr Gln Leu Asn Arg His Gly Gly Pro Asn Phe Glu
163       370                    375                   380
164  Gln Leu Pro Ile Asn Arg Pro Arg Ile Pro Phe His Asn Asn Asn Arg
165  385                    390                   395                   400
166  Asp Gly Ala Gly Gln Met Phe Ile Pro Leu Asn Thr Ala Ala Tyr Thr
167                    405                   410                   415
168  Pro Asn Ser Met Ser Asn Gly Phe Pro Gln Gln Ala Asn Arg Thr His
169                    420                   425                   430
170  Asn Arg Gly Phe Phe Thr Ala Pro Gly Arg Met Val Asn Gly Pro Leu
171       435                    440                   445
172  Val Arg Glu Leu Ser Pro Ser Phe Asn Asp Val Trp Ser Gln Pro Arg
173       450                    455                   460
174  Leu Phe Tyr Asn Ser Leu Thr Val Phe Glu Lys Gln Phe Leu Val Asn
175  465                    470                   475                   480
176  Ala Met Arg Phe Glu Asn Ser His Val Arg Ser Glu Thr Val Arg Lys
177                    485                   490                   495
178  Asn Val Ile Ile Gln Leu Asn Arg Val Asp Asn Asp Leu Ala Arg Arg
179                    500                   505                   510
180  Val Ala Leu Ala Ile Gly Val Glu Pro Pro Ser Pro Asp Pro Thr Phe
181       515                    520                   525
182  Tyr His Asn Lys Ala Thr Val Pro Ile Gly Thr Phe Gly Thr Asn Leu
183       530                    535                   540
184  Leu Arg Leu Asp Gly Leu Lys Ile Ala Leu Leu Thr Arg Asp Asp Gly
185  545                    550                   555                   560
186  Ser Phe Thr Ile Ala Glu Gln Leu Arg Ala Ala Phe Asn Ser Ala Asn
187                    565                   570                   575
188  Asn Lys Val Asp Ile Val Leu Val Gly Ser Ser Leu Asp Pro Gln Arg
189                    580                   585                   590
190  Gly Val Asn Met Thr Tyr Ser Gly Ala Asp Gly Ser Ile Phe Asp Ala
191       595                    600                   605
192  Val Ile Val Val Gly Gly Leu Leu Thr Ser Ala Ser Thr Gln Tyr Pro
193       610                    615                   620
194  Arg Gly Arg Pro Leu Arg Ile Ile Thr Asp Ala Tyr Ala Tyr Gly Lys
195  625                    630                   635                   640
196  Pro Val Gly Ala Val Gly Asp Gly Ser Asn Glu Ala Leu Arg Asp Val
197                    645                   650                   655
198  Leu Met Ala Ala Gly Gly Asp Ala Ser Asn Gly Leu Asp Gln Pro Gly
199                    660                   665                   670
200  Val Tyr Ile Ser Asn Asp Val Ser Glu Ala Tyr Val Arg Ser Val Leu
201       675                    680                   685
202  Asp Gly Leu Thr Ala Tyr Arg Phe Leu Asn Arg Phe Pro Leu Asp Arg
203       690                    695                   700
204  Ser Leu Val
205  705
208  <210> SEQ ID NO: 3
209  <211> LENGTH: 8
210  <212> TYPE: PRT
211  <213> ORGANISM: Histoplasma capsulatum
```

RAW SEQUENCE LISTING
PATENT APPLICATION: **US/09/674,195B**

DATE: 12/13/2002
TIME: 13:54:12

Input Set : **A:\W159565.txt**
Output Set: **N:\CRF4\12132002\I674195B.raw**

```
213 <400> SEQUENCE: 3
214 Ser Asp Pro Thr Asp Gln Phe Leu
215 1                   5
217 <210> SEQ ID NO: 4
218 <211> LENGTH: 15
219 <212> TYPE: PRT
220 <213> ORGANISM: Histoplasma capsulatum
222 <400> SEQUENCE: 4
223 Asp Phe Ile Phe Arg Gln Lys Ile Gln His Phe Asp His Glu Arg
224 1               5               10              15
226 <210> SEQ ID NO: 5
227 <211> LENGTH: 9
228 <212> TYPE: PRT
229 <213> ORGANISM: Histoplasma capsulatum
231 <400> SEQUENCE: 5
232 Thr Leu Gln Gly Arg Ala Gly Leu Val
233 1                   5
235 <210> SEQ ID NO: 6
236 <211> LENGTH: 16
237 <212> TYPE: PRT
238 <213> ORGANISM: Histoplasma capsulatum
240 <400> SEQUENCE: 6
241 Ala Gln Ala Leu Gly Gly Lys Asn Pro Asp Phe His Arg Gln Asp Leu
242 1               5               10              15
244 <210> SEQ ID NO: 7
245 <211> LENGTH: 6
246 <212> TYPE: PRT
247 <213> ORGANISM: Histoplasma capsulatum
249 <400> SEQUENCE: 7
250 Ser Gly Arg Tyr Pro Glu
251 1                   5
253 <210> SEQ ID NO: 8
254 <211> LENGTH: 10
255 <212> TYPE: PRT
256 <213> ORGANISM: Histoplasma capsulatum
258 <400> SEQUENCE: 8
259 Phe Asp Phe Asp Leu Leu Asp Pro Thr Lys
260 1               5               10
262 <210> SEQ ID NO: 9
263 <211> LENGTH: 14
264 <212> TYPE: PRT
265 <213> ORGANISM: Artificial Sequence
267 <220> FEATURE:
268 <223> OTHER INFORMATION: Description of Artificial Sequence; M antigen-specific
oligonucleotide
270 <400> SEQUENCE: 9
271 Ile Ile Pro Glu Glu Leu Val Pro Phe Thr Pro Ile Gly Lys
272 1                   5               10
275 <210> SEQ ID NO: 10
276 <211> LENGTH: 15
```

**RAW SEQUENCE LISTING ERROR SUMMARY**      DATE: 12/13/2002
PATENT APPLICATION:  **US/09/674,195B**      TIME: 13:54:13

Input Set : **A:\W159565.txt**
Output Set: **N:\CRF4\12132002\I674195B.raw**

Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:1; N Pos. 3258
Seq#:11; N Pos. 3,9

**VERIFICATION SUMMARY**  
PATENT APPLICATION:  **US/09/674,195B**

DATE: 12/13/2002  
TIME: 13:54:13

Input Set : **A:\W159565.txt**  
Output Set: **N:\CRF4\12132002\I674195B.raw**

L:96 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:3240  
L:326 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11 after pos.:0